

APPENDIX VII Oil in Sinkiang

● 315 IT HAS long been known that there are sources of oil in Sinkiang. Seepage oil, thinned out with vegetable oil, was traditionally used for lighting. The crude oil was also used for axle grease.

Deposits are known to lie along the Tien Shan, both north and south of the main range. More recently, oil has been struck in the extreme south of Sinkiang, at the edge of the Tibetan plateau.

East of Sinkiang, there is oil in the western "panhandle" of Kansu; still farther east, oil has been worked on a small scale in northern Shensi province, near the wartime Communist capital of Yen-an. It does not appear to be known whether any or all of these deposits, which are the only known deposits in Chinese territory, are geologically related to the oil fields of the Caspian region, in Soviet territory, or to those of Iran in the Middle East.

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315 In 1948, the Chinese National Resources Commission (NRC) confirmed press reports of the discovery of oil on the Sinkiang-Ch'inghai border, near the newly constructed highway connecting those two provinces. Mr. C. H. Wu, Secretary General of the NRC, stated that the field is located at Timurlik, near the border of the Tsaidam Basin, which forms the lowest part of the Tibetan plateau, between 80 and 92 degrees longitude and 36 and 40 degrees latitude. It was discovered by the exploration department of the Kansu-Ch'inghai branch of the Chinese Petroleum Corporation, an NRC subsidiary. According to Dr. Wu, a cursory survey reveals more than twenty horizons of oil sand in this field, the thickest horizon being three meters deep. All horizons occur in the Red Bed of the Tertiary Age.

Among the previously known fields, one near Urumchi has been

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worked at times in the past when oil could not be obtained from Russia. This field is known to be of the Jurassic Age. 315 •

A small field, known as Jushantze, is located twenty kilometers southeast of Wusu, about halfway along the main trade route between Urumchi and Kulja. The wells, which are known to be shallow, produce a paraffin-base oil under natural pressure. There is no recent information on production. 135

When the Russians withdrew from Sinkiang in 1942 they capped and turned over to the provincial authorities 25 wells which had been producing 49-52 gravity oil at a depth of 4800 feet. It appears probable that these wells were in the Jushantze field. Although the Russians were quoted as stating that they would return at a later date to work the field again, they took most of the oil-field machinery with them when they withdrew. 315

(Sources: Information from Chinese National Resources Commission, supplied by United States Department of Commerce; see also Huang Chi-ch'ing, *Report on Geological Investigation of Some Oil-Fields in Sinkiang*, by T. K. Huang and others. Nanking, National Geological Survey of China, 1947; No. 21 of Series A of *Memoirs of Geological Survey of China*. Text in English.) 315
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alone, resources are available in such an abundance as can furnish the foundation for a thriving industrialization. 135

Iron, coal, copper and gold have been found near Sui-ting (I-li). Henceforth this important center on the Soviet-Chinese border may take its prosperous tea and fur trade for granted and brag, instead, of blazing furnaces. T'a Ch'eng (Chuguchak), a frontier locality on the road from the Turksib Railway and probably the only city to have boomed more than Sui-ting, is already boasting of the iron vein one hundred and thirty miles long which runs right through the town, and of the Black Oil Mountain nearby. The oil appears abundantly in the form of springs and is especially black and thick. It is probably a tar, for it gets hard and has been used in the laying out and paving of the new provincial highways. There is coal too, not far away. But miners are nothing new for T'a Ch'eng; in the eighteenth and nineteenth centuries there were thousands of them prospecting in the fifty square miles or so of gold mines roundabout, or so the old people say. 135 316

Tihwa (Urumchi), the provincial capital, with a population judged at around 100,000, dominates both the North and South Roads: hence its military and political importance. Nowadays, not to be outdone, it has also been showing great industrial promise. Most of its houses are heated with oil or coal produced in the vicinity. One visitor to Sheng Shih-ts'ai's headquarters saw a piece of coal so huge that it took two men to carry it. 135 361

Farther south, Kashgar (Su-fu), largest oasis in Sinkiang and hub of both transport and political interests from the neighboring lands of Northwest India, Afghanistan, and Soviet Turkestan, is also blessed with natural resources. Kashgar oil, though often merely "scooped out" by primitive means, has long provided the city with gasoline, kerosene, machine oil, and grease. Even Ma Titai, old-school Commander-in-Chief of the Kashgar district at the close of World War I, guessed at the worth of the oil in his domain. He put most of his personal army to the task of tapping wells for him, and almost negotiated a deal with Soviet Russians of Ferghana for modern machinery. The Russians had said they would supply the machinery and would personally see to its being escorted to Kashgar, when Ma's plans hit a snag. His ambitions 361 315 648

361 had come to the ears of Lieutenant-Colonel P. T. Etherton, local British
 315 Consul-General and Political Resident, who made haste to point out
 648 "that the advantages to be gained were out of all proportion to the
 danger incurred. . . ." The Titai is said to have agreed, the Russians
 are said to have been "checkmated," and (unsaid) the industrial develop-
 ment of Kashgar was retarded for another stretch of years. This is a
 sample of the sort of thing that has long been holding back Sinkiang
 development.

181 Yet it is doubtful whether the tribesmen of the Sinkiang steppes and
 oases spent much time yearning for progress as such. They clung to
 their time-honored ways, and a thousand years more or less seemed to
 bring little change or concern. For Sinkiang did have color and charm
 —charm especially of a human, a warm temperament. A perfect host
 might sometimes put his wife or pretty daughter at the disposal of an
 overnight guest but paradoxically the modesty of a woman was pro-
 tected by a face veil. A wealthy khan might expand his harem until
 it almost rivaled that of Yakub Beg, self-made "King of Kashgar," who
 maintained three hundred favorites in state and always took at least
 four with him on his trips to outlying areas. At Sinkiang merry-mak-
 ings, as befitted a nomad's paradise, mare's milk was quaffed with
 gusto and horse meat was regarded an expensive luxury. A fortune-
 teller was always ready to deal out prosperity for the throng of a local
 bazaar; somewhere near by a tambourine would jingle merrily; and a
 samovar was usually singing its own happy song. Uighur, Mongol,
 Kazakh, and Son of Han, all and more, mingled, yet maintained their
 own traditions; and religion ran the gamut—from Mohammedanism,
 Lamaist Buddhism, and ancient Manichaeism to Christianity.

735 But in the old Sinkiang, as has too often been the case elsewhere,
 along with the enchanting and the bizarre there were poverty, cruelty,
 and crime. The Sinkiang peasant in most cases made his home in a
 dirty, mud-wood hovel or, on the steppe, in a primitive, tent-like abode.
 It was at times hard going for him to scrape up enough food on which
 to feed himself and his family, and often he took to begging and to
 681 thievery, only to be apportioned harsh punishment. It was not unusual
 696 for a servant, caught stealing, to have his fingers or part of his tongue

- 232 The administration of the New Sinkiang has taken significant steps to assist the peasants in the solving of their agricultural and animal husbandry problems. Field stations have been set up in every county with, among other services, eight veterinary hospitals and one veterinary school. There are province-wide facilities by which farmers may rent farm machinery otherwise unavailable. Experimental irrigation stations, forestry offices, and weather bureaus have all been established under Sheng's administration. These are epoch-making innovations for this once relatively isolated "desert" area.

Mineral Resources

- 135 Chinese reports have long testified to the rich mineral potential of Sinkiang Province, but the Occident has only recently attempted systematic study of that testimony. Now it is learned that numerous oil fields have been put into operation in Sinkiang. "Prosperous," though primitive, iron foundries have existed since the time of Ch'ien Lung (1736-1796), and now the Sinkiang iron veins are being rapidly opened. Excellent coal is found near Tihwa, Kashgar, and Yangi Hissar. The gold fields of the Altai Mountains are among the richest in Asia; and good-quality copper ore is being extracted from a number of deposits. Almost virgin mineral riches lie in the soil of Sinkiang, and serious attempts have recently been made to bring them into full utility.

Petroleum. A so-called "Ferghana Series" of oil-bearing strata runs into Kashgaria from Russian Turkestan and extends along the foot of the T'ien Shan past Aqsu to Kucha (K'u-ch'e). What may be an extension of this same series reappears again in the region of the Sinkiang North Road. The extent to which this series now is being utilized is indicated by the next table which names some of the fields of the province.

- 315 Samuel Chao gives a figure of 85,000 catties as the annual production of Sinkiang mineral oil. But in the past there has only been fractional utilization of the provincial oil potential; there has not, moreover, been sufficient public information on the more recent developments, which have no doubt shot the figure considerably higher.

PETROLEUM FIELDS IN SINKIANG

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<i>Locale</i>	<i>Field</i>	<i>Comment</i>
Kashgar (Su-fu)	Unnamed	4 mi. long & 2 mi. wide; daily yield, 100 catties for 1 well
Kucha	K'o-la-ya-lun	Over 100 catties daily
Manas (Sui-lai)	Lake An-chi Hai	Largest field in Western China; quality oil comparable to Baku product
	Ch'ia-tzu Wan	4 gushers; output, 20-30 catties daily
	Shih-yü Yen	Output, about 50 catties daily
	T'ung-ku Po	9 wells; output, over 200 catties daily
	Po-lo-t'ung-ko	Operations suspended; former yield, 70 catties daily
So-ch'e	Shang-wo-p'u	70-80 catties daily
T'a Ch'eng (Chuguchak) ..	Black Oil Mt.	9 oil springs; possibly a tar; daily yield of greatest spring, 200 catties
Tihwa	Ssu-pen Kou	7 oil fields in Tihwa, 3 abandoned; Ssu-pen Kou & Su-ta-chang, outstanding
	Su-ta-chang	See above
Wen-hsü	T'a-na-k'o	"Hundreds" of catties "regularly"
	Ma-li-li-k'o Shan	
Wu-su	Tu-tzu Shan	4 fields in Wu-su; 32 oil springs, 15 operating at Tu-tzu Shan

Iron. Sinkiang iron is distributed both in the north and south. The vein which runs through T'a Ch'eng is really the largest in the province, though that of Khara Balgasun Mountain near Turfan is historically the best known to Chinese. Prime difficulties with iron mining in Sinkiang have been its seasonal or market fluctuations and, as with so

CHAPTER XVI

ALARUMS AND EXCURSIONS

WE returned from Keriya towards the end of May to find Kashgar in a ferment of excitement. For some time past I had known that there was trouble brewing for our local ogre, General Ma, "Titai" or Commander-in-Chief of the forces in the south-west of the province, and self-styled King of Kashgar. Since the famous lunch-party of July 1922, described in Chapter VI, the situation had developed. The old bandit, drunk with power and firmly believing that there was no one in all Central Asia strong enough to call him to account, surpassed all his previous records in oppression. He robbed, blackmailed, mutilated, slave-drove and otherwise tyrannized over the unfortunate inhabitants of the New City and district to his heart's content, snapping his fingers at the remonstrances of the Taoyin and other civil officials. Farmers and petty shopkeepers began to leave the country in large numbers nominally on pilgrimage to Mecca, but in reality to escape the tyranny of the "Padshah."

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The interesting feature of the Titai's methods of self-enrichment was that they were not confined to those of the traditional Asiatic tyrant. There was a touch of the practical Chinese business man about him, for he did not content himself with merely transferring wealth from other people's pockets to his own; he created it. He claimed all the minerals of the country as the perquisite of the military authorities, and exploited them for his own benefit. His coal and copper-mines, his oil-wells and refinery, his jade-cutting factory and other enterprises, brought him large profits. As a capitalist, his position was an enviable one; for he enjoyed a monopoly not only of raw materials, but also of armed force with which to secure cheap labour and push the sale of his products.

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It would take too long to describe the various interesting

622 methods by which the unscrupulous General exploited his
 661 command. One illustration will suffice. The chief product
 • [315] of his shale-oil workings at Kanjungan, 30 miles west of Kash-
 [382] gar, was kerosene, which was in great request owing to the
 failure of the Russian supplies. This he sold at monopoly
 prices to the public, including ourselves at the Consulate.
 But for certain by-products of the New City refinery, such as
 paraffin wax, there was little demand. Accordingly in the
 winter of 1923-4, the Titai conceived the idea of portioning
 out the two towns into wards and appointing certain Begg
 and other trusty henchmen to distribute so much paraffin
 wax *per mensem* to each shopkeeper, whether he wanted it or
 not, at a fixed rate. The cobblers, who used wax in their
 trade, had to take double rations. Very soon complaints
 began to be heard, which were eventually voiced by the
 Aqsagal or headman of the cobblers. He petitioned the
 Titai to let the cobblers off taking any more of his wax, as
 they were overstocked, besides which they preferred bees'-
 wax. The Titai's answer to this petition was to have the
 man beaten to death, and to fine his widow so heavily that
 she had to sell the house over her head to pay the fine. As
 might be expected, the underlings engaged in the distribution
 of the wax lined their own pockets liberally. They took to
 compounding with the shopkeepers at so much a head, and
 the forced sale developed into a regular monthly tax on shop-
 keepers. The distributors ceased to confine their depreda-
 tions to the towns of Old and New Kashgar and sent agents
 all over the districts collecting the wax *gabelle* from petty
 shopkeepers in the remotest villages.

704 Apart from his industrial enterprises and his more direct
 methods of robbery and extortion, the Titai drew large sums
 from the Kashgar Treasury for the upkeep of the troops with
 which he was supposed to guard the frontier and garrison
 the towns. Needless to say, not a tenth of these sums was
 spent. The nominal strength of the Titai's forces was between
 4,000 and 5,000; the actual number maintained may have
 been about 500. Most of these were quarter-trained, opium-
 sodden wretches who received neither pay, rations nor equip-
 ment, and lived on the country by virtue of the fear inspired
 by their terrible chief, and the antiquated (and in most cases
 quite useless) carbines they carried. But the Titai was
 wrong in thinking that he could eat his cake and have it, for
 his Gilbertian army proved his downfall.

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135 oil field which was discovered near Yümen in northwest Kansu during the latter part of the last war. Though several wells had been drilled and a small refinery plant established, oil production was never large due to shipping and transportation difficulties. (It might be noted that construction of the Kansu-Sinkiang Railway has been completed up to Yümen in July 1956. Tank cars may now replace trucks in the transportation of Yümen oil.) Despite these adverse factors, the Peking Government's planned economy gives top priority to the development of the known and the search for the unknown mineral wealth of China's Northwest.

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315 Thirteen construction projects were completed in the Yümen Oil Field, China's biggest oil center, in the spring of 1955. A number of these projects now enable Yümen to produce eighteen percent more heavy lubricating oil and fifteen percent more kerosene. (NCNA April 22, 1955). A large coal field was discovered in Kansu in April, 1955. It is reported the new discovery with a total of approximately thirty-two million metric tons is four times as large as the A-kan-chen colliery of Kao-lan (Lanchow) county, one of the major coal mines in the province.

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315 • Work has been started by three oil prospecting teams sent to Sinkiang and Chinghai provinces by the Northwest Geology Bureau under the Ministry of Geology. The prospectors are operating in Turfan and Dzungaria Basins, Sinkiang and in Tsaidam, Chinghai, to locate oil-bearing structures, oil shales, heavy feldspar and other minerals. (NCNA April 19, 1955). One of the plans for 1955 was to complete the prospecting of several oil-bearing structures in the Turfan Basin and obtain the data to design a modern shaft mine in the Urumchi coal field (American Consul General, SCMP, June 1-30, 1955). In addition, rich coal deposits have been discovered in North Sinkiang, particularly in the Ili Valley.

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316 According to 1955 reports, new oil fields were discovered and drilled, e.g., at Tu-shan-tzu, south of Wu-su, and new coal fields were discovered in Sinkiang. Up to now, eight coal fields are being worked along the foothills of Tien-shan in Sinkiang, which form one of the largest coal fields in China, ranking third among all the provinces. In coal reserve, Sinkiang is next only to Shansi and Shensi. The present coal reserves of Sinkiang are estimated at 35,040 million metric tons and can last for three hundred years at the present daily output rate of 320,000 tons.

Iron ore and ferro-metals like tungsten, manganese, molybdenum and nickel, as well as some non-ferrous minerals, like gold, platinum, copper, lead and zinc, and aluminum have been discovered and some even worked, especially in the province of

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[648] Sinkiang. The discovery of uranium and some other fissionable materials has been reported there. While rumors that Sinkiang is being built up into an atomic arsenal for Russia remain to be confirmed, nevertheless it seems to be of particular strategic importance in the building up of a joint Sino-Soviet Inner Asian fortress.

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[648] Under a previous Sin-Soviet agreement concluded in 1937, the U.S.S.R. carried out prospecting and drilling in regard to petroleum exploitation. Fields were discovered in several localities, and a refinery was built at the Wu-su field, which, completed in 1940, had a daily capacity of a thousand barrels. This refinery was closed, however, in 1943. The largest field discovered to date, some forty miles in length, is located at An-chi-hai. No estimate of reserves is available at present, but on the basis of known fields and producing wells, Sinkiang has China's most extensive and abundant reserves, far outstripping those of Shensi, Kansu and Szechwan. Moreover, the oil from Sinkiang bores is reportedly of better quality than that found in other provinces in the Northwest.

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[648] Before the Sino-Soviet Agreement of Moscow on March 27, 1950, the mineral exploitation of Sinkiang was carried out sporadically and on a very small scale, with inefficient local mining methods predominating. Under the terms of the 1950 Moscow Agreements, a joint Sino-Russian petroleum company was formed with Russian-supplied technicians and equipment to undertake prospecting, surveying, working, and refining of petroleum and gas. Two other similar corporations were also organized to explore and exploit the non-ferrous and rare metals. By agreement the products of the corporation were to be divided equally between China and the U.S.S.R., as well as running expenses and profits. Leadership of the corporations was to be assumed by representatives of the two contracting parties in rotation for periods of three years and the corporations were to be staffed by an equal number of citizens from each of the two countries. The agreements were supposed to be valid for thirty years. (China Weekly Review, July 1, 1950, p. 82). It has been reported that all three Sino-Soviet joint corporations have been transferred to Chinese ownership, although with Russian advisers, since the beginning of 1955. At the same time, the Peking Government, together with Sinkiang authorities, sent out three large survey teams to search for new mineral deposits.

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135 Northwest China has a great variety of minerals, only a few of which have been even partially developed. In addition to the rich oil fields of both Kansu, Sinkiang, and possibly Shensi, and the abundant coal deposits of these three provinces, other recently discovered minerals are as follows: rich copper deposits

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135 in Kansu province; in addition, bornite, presumed to be very rare in the eastern hemisphere, has been discovered in southern Shensi province, leading to the belief that China may have rich additional bornite deposits. (China Monthly Review, May, 1953, p. 75.) In addition, several new copper deposits were found at Pai-cheng, Urumchi, Kashgar and Ili in Sinkiang province.

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135 Rich iron ore deposits have been discovered with a proved reserve of as much as 47,537,000 metric tons in Sinkiang, sixth among all the provinces. (1945 Mining Report, China Geological Survey). In addition, some new iron ore deposits were found in Urumchi, Kucha, Pai-cheng, Wuka, Ta-cheng, and I-ning. Together with the discovery of some high quality tungsten ore in Wen-chuan of Sinkiang and some manganese ore in Kan-ku and Yung-teng of Kansu, Sinkiang possesses practically all the basic elements for the development of iron and steel industries.

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135 There are many inland lakes and dried up lake basins all over the northwest provinces, among them the Tsaidam of Chinghai and Tarim of Sinkiang, two of the largest inland drained basins in the world. They provide the basic sodium salts. The almost inexhaustible and widespread salt and soda deposits in Kansu and particularly in parts of Ninghsia, Chinghai and Sinkiang together with the nearby rich oil fields provide a sound basis for the development of chemical industries.

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135 While the mineral resources of northwest China are still being surveyed and their actual extent is not known, the outlook appears promising, particularly in the province of Sinkiang. All in all, northwest China with an area of 412,159 square miles and a population of 35,359,525, endowed with mineral wealth, has great prospects of becoming one of China's major industrial centers in the future.

B. The Principal Minerals

1. Fuel and Power

a. Petroleum and Oil Shale

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(439) Until recently, oil refineries in China have been crude, most of them having been manufactured locally; the only ones of any size are located at Shih-you-ho in Kansu and at Tu-shan-tzu in Sinkiang. New refinery equipment was ordered from America at the end of the war, which provided a modern installation capable of handling greatly increased production and making oil products of a much better grade from the Shih-you-ho plants at the YU-men field in northwest Kansu. Some similar modern refinery equipment has been bought from the Soviet bloc, reportedly Poland, Czechoslovakia and Rumania, for the

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[315] new oil plants at Tu-shan-tzu in Sinkiang. Undoubtedly, the exploitation of the YU-men oil field of Kansu has been considerably increased in the last two years. At a conference on petroleum research, called in May, 1954, by the Ministry of Fuel, Popoff, a Russian professor, laid great emphasis on the development of YU-men oil fields, where Russians have been working side by side with German, Czech, and Rumanian oil experts (KM Oct. 1, 1954). Towards the end of 1953 the Russian Atlas (sic!) was experimenting there on an improved method of oil exploitation which was to be introduced in 1954 (PD Feb. 9, and June 23, 1954).

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654 Special emphasis on oil prospecting and drilling are given by the Communist Government. Throughout the nation, geological surveying and prospecting plans since 1953 have been the most intensive in China's history. Total Government investment in surveying in the Northwest in 1953 was nearly seven times more than the previous year. Twice as many oil wells were planned to be sunk in 1953 as compared to 1952, while work on other mineral reserves topped previous years' quota by thirty-three percent.

The bureau in charge of prospecting and surveying mineral reserves in the Northwest trained nearly 2,000 workers in drilling, surveying, drawing, and analysis in 1953. (Geological Report, China Monthly Review, May, 1953).

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315 The first drilling for oil was made some sixty years ago at Yen-chang in northern Shensi province. During the Anti-Japanese war, China spent large sums to equip the China National Petroleum Corporation's field at YU-men in Kansu. At present, the major production is at Shih-you-ho near YU-men in the most northwestern part of Kansu at the foot of

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[133] the Nan-shan. There the possible oil-bearing formations extend 700 miles, with a width of some tens of miles. Seepages are known in four localities, but only a few anticlines have been developed. Drilling started in 1939, and the yield amounts

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[433] to several thousand barrels a day. The oil has a fifteen percent paraffin base. Prospects in Sinkiang appear even more promising, with oil on both sides of the Tien-shan Mountain Range. S
315 Drilling at Wu-su, west of Urumchi and in the northern foothills of Tien-shan began in 1935, under Soviet direction. Its [648] current yield is only a few hundred barrels a day. However, some [433] new fields have been discovered and new wells drilled in other parts of the province.

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315 Recently, both oil-extracting and refining industries have been growing rapidly. Refining facilities in northwest China with its five oil regions distributed in north Shensi, West [315] Kansu, central Kansu, and Ho-hsi corridor and Sinkiang have been substantially extended. Petroleum development is one of

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[433] now enable YU-men to produce eighteen percent more heavy
lubricating oil and fifteen percent more kerosene. (NCNA
April 22, 1955).

Numerous new oil-bearing structures and seepages have
recently been discovered around Wu-chung, Ku-yüan, Hua-ting
and some other districts in Eastern Kansu province. A recent
report stated that preparations are now being made to drill
a deep test well on the biggest structure which extends over
120 square kilometers around Wu-chung. (See Table II.) ¹

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[35] Oil Development in Sinkiang:

To the west of Kansu lies Sinkiang, a province rich in
minerals, particularly oil. Recent prospecting reveals that
Sinkiang has excellent oil possibilities.

There are two basins, the Dzungarian in the north and the
Tarim in the south. Seepages have been found in both and the
prospects of finding petroleum are good. The Dzungarian
Basin is enclosed between the Tien-shan Range on the south
and the Altai mountains in the north. Seepages are reported
at Ching-shih-hsia near Chuguchak (Tarbagatai or Ta-cheng)
(46.45 by 83.40), near Kuldja (Ili or Ining) 43.48 by 81.17),
at a place southwest of Sui-lai (44.21 by 86.19) and at Urumchi
(Tihua) (43.48 by 87.36). The Ty-shan-tzu field is about
five miles southeast of Wu-su, (location approximately 44.15
by 83.00). In the district of Wu-su there are also oil seepages
at Ssu-su-mu, Chiang-chun-kou, An-chih-hai-ho, and Ta-shih-
tan.

The Tarim Basin lies south of the Tien shan and north of
the Kunlun and Altyn Tagh mountains in southern Sinkiang. It
is occupied by the great Takla Makan Desert, one of the most
barren spots on earth. A small, undeveloped oil field is said
to exist at Hei-tzu-erh-po near Kashgar (39.27 by 75.59), and
there are oil seepages at Su-ta-che, Shui-mo-kou, Tun-ho,
Ssu-cha-kou, Wensu Aksu (41.06 by 79.58), at Shang Wu-pu
in Sha-che, Yarkand, Hsiao-kuai in Sha-wan and at Kucha
(41.40 by 83.04). From the geological formation, which consists
of a thick series of Tertiary strata containing marine
Eocene beds in the western part of the basin and which underlie
the basin, it is thought that the oil possibilities are good. Much
work will have to be done to map the structures.

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[33] Drilling has been started at Hung-tung-shan in Kucha, at
Hsi-ho in Tarbagatai (T-cheng), Tu-shan-tzu south of Wu-su,
Urumchi, Turfan, and Kashgar (Shu-leh). Petroleum is obtained
to the west of Urumchi, where the oil is scooped from the sur-
face of water with buckets. The petroleum is of black color.
Petroleum can also be found from Shih-ho to Manas in the
Urkashar Mountains, and also between the caravan stations of
Kurtu Anchihai-ho in the district of Wu-su. The richest
1, [See p. 128--Analyst]

- 315 petroleum resources are between the last two stations extending in a north-south direction with a length of forty miles; the petroleum is yellow and easy to refine. The oil from Sinkiang is reportedly of better quality than that found in other provinces in the Northwest of China. One of the main centers of petroleum exploitation is at Tu-shan-tzu, five miles south east of Wu-su, on the Western Highway of Urumchi; there exist wells over 2,275 meters in depth.

[133] The intermittent Tertiary oil sands are said to lie between a light green shale above, and the sandstone below. No record of the drilled stratigraphic sections is available. The Sinkiang [648] provincial authorities employed two Russian drilling experts, and in 1935 they began to test the field with modern drilling rigs. Some time later the Russians took over the project and after 1939 increased their efforts to develop a producing field safe from enemy action. In 1942, only three or four of the seventeen known wells drilled were producing, and only one was [433] flowing, the others being pupped. Yield was said to be ten to thirty tons per well per day. Other wells were being drilled, but it is not known how many were completed. In 1943 there [648] was some disagreement between the Soviet and Chinese Governments and the Russians left the field. In August, 1944, an [433] American oil man visited the field and reported that the Chinese had uncapped six producing wells and were producing about fifty tons of crude oil a day. The wet gas was wasted as there was no equipment for saving it. The oil is thought to have a paraffin base, similar to that of Kansu. Sample distillation gives nineteen percent gasoline, twenty-three percent kerosene, and the remainder, black oil and residue.

At Tu-shan-tzu in Wu-su, there are more than thirty oil wells being drilled. There is a fairly good refinery which makes it the best oil-producing center of Sinkiang. In addition to gasoline and kerosene, it produces lubricating oil for airplanes.

At Taklak small oil wells are drilled by the natives along the Kun Alik Range to the south east of Taklak in Wen-su, northwest of Aksu. The natives work on a small scale during the Spring, Summer, and Autumn. At Hung-kou and An-chiu, southeast of Wu-chia, oil wells were drilled in the late 1940's, but no oil is produced in Hung-kou, although the natives extract some paraffin wax from the oil sands. However, oil is obtained from the well in An-chiu, but the output was only two to three gallons a day in 1949-50. (See Table III.) $\frac{1}{2}$

315 Oil prospecting teams were sent to Sinkiang by the Northwest
654 Geology Bureau under the Ministry of Geology in early 1955. They went to the Turfan and Dzungaria Basins (as well as Tsaidam of Chinghai province) to locate oil bearing structures, 1. [See p. 129--Analyst]

TABLE
III. Distribution of Oil Wells in Sinkiang.

Location	Year Drilled	Depth, meters	Past Production	Lat. & Long.
Ssu-cha-kou, 45 km W of Urumchi	1934	shallow	small	43.51 x 87.16
Ching-shih-hsia (Kaiavusun) or Hsi- ho) 95 km SE of Tarbagatai	Not available	seepages ^R	fair	46.04 x 83.34
Tu-shan-tzu, 25 km SE of Wu-su	1934-42	2,275	From few hundred bbls (1942) to 1000 bbls in 1946; now 10-30 tons a day.	44.18 x 84.54
Hung-tung-shan (Kolayalun)	Not available	seepages	50 tons a day from 6 uncapped wells (1944)	42.06 x 82.47
Nan-shan, 40 km. W of Shu-fu, to the W of Kashgar	Not Available	seepages	small	29.32 x 75.31
Taklak, along Kunalik Range 50 km NE of Wen-su	Not Available	seepages	small	41.40 x 80.12
Hung-kou and An-chiu, SE of Wu-kia (Urukhe- kiati)	Not Available	seepages	2-3 gal/day(1949)	38.04 x 74.50

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464 Tibetans. The prisoners were organized in military fashion,
466 i.e., squads, platoons, companies, battalions and regiments,
497 led by Chinese of the so-called Transport Army Corps. The
499 prisoners had to work twelve hours a day. They were
668 rigidly guarded by means of machine gun towers. Due to
177 undernourishment, overwork and rough weather conditions
the death ratio was about thirty to fifty men a day. The
equipment was of Russian origin and handled by Russian
"specialists."

According to the same source about 180,000 were employed
in levelling the terrain and building the embankment for
the railway tracks on the route between Kulja-Wusu-Urumchi
and Turfan. The prisoners were mainly Chinese but heavily
intermingled with minority groups, either condemned in-
surgents, court-martialled soldiers or people who were
tried by People's Courts for being "kulaks," saboteurs,
"capitalistic spies" or former independent tribal leaders.
Entire Tibetan tribes of the Sinkiang-Tibetan border area,
who repeatedly revolted between 1950 and 1953 were finally
captured and brought to the Bogda-Ula (mountain range with
elevation up to 17,000 feet) where the passes and tunnels for
a railway were constructed. The Communists first used
Chinese prisoners but the death rate was extremely high
because the Chinese, who were sent mainly from China
proper, could not become accustomed to the rough climate
of the T'ien-shan mountain range. The construction took
[648] place under the supervision of the 18th cavalry regiment of the
9th Soviet Cavalry division. Technicians and "specialists"
are mainly Soviets. Administrators are Chinese Communists.
At the same time Chinese military units are trained by Russians
in regard to embankment constructions.

In the coal and petroleum area of Wusu, Urumchi and Kurla
about 35,000 prisoners worked, reinforced by Soviet and
Chinese engineers and technicians. Dozens of mountain roads
were built by pioneer units of the People's Transport Army
Corps which do all the dynamiting and bridge building, while
prisoners do routine work.

464 Two Turkic refugees, now living in Germany, reported that
466 they were working for an irrigation building co-op in Mazartagh
497 on the Khotan River. Those co-ops usually receive fifty to a
668 hundred prisoners as handymen, who are guarded by a few
177 Chinese soldiers, who are stationed at the co-op.

464 Another Turkic refugee who was sentenced to ten years
466 (1950) for underpaying his employees in his fur trade enterprise
497 was sent to the oil field near Yu-men in Kansu. His sentence
668 was reduced to two years when he saved a bulldozer at the risk
177 of his life when an oil shaft blew up. He said about 18,000

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[548] prisoners work on the oil fields. When he returned to his home town Keriya in 1953 he had to go through Soviet control posts at the Sinkiang-Kansu border towns of Hsinhsingsia and Kushui.

After his flight, the former Aksakal of Kizilbulak (northeast of Aksu) Abdul Azizi Hajji wrote an article in the Turkish newspaper Ulus, July 15, 1955, relating how all cities along the line Kashgar, Aksu, Karashahr, Urumchi, Turfan, Hami, Kulja, Ili, Chuguchak, including the Tarbagatai region, are occupied by at least four Soviet divisions, two of which definitely have been identified as tank divisions, equipped with T34 models.

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[548] A copy of the well-informed newspaper Al-Mizir (Cairo) of May 19, 1955, says that the total number of prisoners who are used as forced labor amounts to 380,000 in Sinkiang alone.

4. Sinkiang

473 Industrial development in Sinkiang is perhaps the fastest
175 in the entire Northwest. As early as 1950, four Sino-Soviet
177 joint-stock companies were established in Urumchi, of which
three were industrial plants. They were: (1) Sino-Soviet Non-
ferrous Metals Company, (2) Sino-Soviet Rare Metals Com-
pany, (3) Sino-Soviet Petroleum Company and (4) Sino-Soviet
Airlines. All the Soviet stocks were reportedly transferred
to China at the end of 1954, but the Soviet technicians have
remained there to help train the Chinese workers.

668 After the Communists took over, the Sinkiang Petroleum
175 Company has been greatly expanded. Its crude oil output in 1955 is
315 said to have been sixty-three percent higher than in 1954, and
473 deep testing wells were being sunk in five new districts in the
Gobi Desert to investigate their oil reserves. The five districts
are located in the Turfan and Dzungaria Basins in the Sinkiang-
Uighur Autonomous Region.

175 Another important industrial plant in Sinkiang is the July
288 First Cotton Mill, which began production in 1952. In early
1955, 16,500 spindles and 600 looms were added, which will
double the mill's cloth output. The total number of spindles was
then over 30,000 and of looms, one thousand. This is the first
modern textile mill built in Sinkiang, and it supplies the thirteen
nationalities there with a rich variety of fabrics manufactured
from the cotton grown in the province itself.

471 According to the province's initial plans, the investment in
capital construction during 1955 is to be increased by over
sixty percent as compared with 1954. A total of twelve construction
jobs are to be newly built or rebuilt. Preparations are under
way for these works. Among the new projects are a modern
471 cement factory, a sulphuric acid factory, a small hydraulic
339 power plant and an oil pressing mill. The cement factory was
381 expected to have its first stage of construction completed in
1956. When completed, this factory will save the state a total
[327] of ten million yuan each year in the cost of transporting cement
[258] from China Proper. When the sulphuric acid factory starts
production, it will supply all the raw material needed for
printing and dyeing works by the July First Cotton Mill.

471 The eight units to be rebuilt in 1955 include the Liu-tao-wan
316 Colliery, the Sinkiang Machine Works, the Ceramic Factory,
392 and the First Cement Factory. When the underground tunnel of
339 the Liu-tao-wan Colliery is rebuilt, it will be possible to
323 produce more coal for the industries and local residents of
Urumchi. The output of modern farming tools will be increased
when the Sinkiang Machine Works is rebuilt. After a set of
automatic equipment is added to the glass workshop of the Ceramic
Factory, there will be nineteen additional kinds of new products
to supply the market.

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[439] and is used mainly for wrapping. The annual output of the white flax paper is about 966,870 bundles, and that of black flax paper is 3,982,480. Part of this is exported to Szechwan, Hankow and Anhwei.

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[433] (c) The "improved" paper. It is produced and consumed mainly in Kansu, at the rate of some 300,000 bundles per year.

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[433] (d) The "mulberry-skin" paper. It is produced and consumed mainly in Sinkiang, at the rate of some 565,977 bundles a year.

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433 (4) Bamboo articles. A side-line of farmers, they are made in many places, especially in Hua-hsien and Han-chung, in Shensi and Min-hsien, in Kansu. The annual output is estimated as follows: (1) farming implements, 29,280 piculs, (2) sieves, 132,300, (3) large bamboo baskets, 480,000, and (4) small bamboo baskets, 27,000.

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[294] (5) Straw hats. Also a side-line of farmers, they are made in many places, especially in Feng-hsiang, Wei-nan, Lin-tung, and Chang-an, in Shensi. The annual output in Shensi alone exceeds 1,377,900 hats.

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[412] (6) Brooms. They are made mainly in the districts near Mount Chung-nan, such as Mei-hsien and Chang-an. The annual output exceeds 800,000 brooms.

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[285] (7) Straw mats. They are produced mainly in Sui-te, Shensi, Chang-i, Kansu and Ninghsia City, Ninghsia. The annual output exceeds 3,000,000 pieces.

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[412] (8) Wooden rakes. One of the main farming implements in the Northwest, they are made mainly in Chang-an, Pu-cheng and Tung-chuan, Shensi. The annual output is about 88,000 pieces.

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[415] (9) Iron utensils. They are produced mainly in Pao-chi and Feng-hsiang in Shensi, and Tienshui in Kansu. The annual output is about 76,000 counts.

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[439] (10) Carpets. Carpet-making is one of the main handicrafts in Sinkiang. The carpets come in various sizes, up to eight by sixteen feet. The annual output exceeds 10,000 square feet. Of that quantity, some six thousand square feet is exported to India, Afghanistan and Soviet Russia and the rest is sold locally or to other provinces in the Northwest.

N 6. Evaluation and Prospects.

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[315] For the time being, the Communists seem to have concentrated on two things in industrializing the Northwest, one being the cotton industry in Shensi and Sinkiang, and the other being the oil industry in Kansu, Sinkiang and Chinghai. From the economic point of view, these developments are not unnatural, because Shensi and Sinkiang have been famous for their raw cotton, and the oil reserve in China is largely located in the Northwest.

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[315] While the present industrial development in the Northwest may not appear so impressive, this area will probably become